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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,761	09/11/2003	Alan John Kingsman	674523-2005.2	9467

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FROMMER LAWRENCE & HAUG
745 FIFTH AVENUE- 10TH FL.
NEW YORK, NY 10151

EXAMINER	
SCHNIZER, RICHARD A	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/661,761	KINGSMAN ET AL.	
	Examiner	Art Unit	
	Richard Schnizer, Ph. D	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *63-81* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *63-81* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/224,014 .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

An amendment was received and entered on 12/9/05. Claims 20-62 were canceled, and new claims 63-81 were entered.

Claims 63-81 are pending and under consideration in this Office Action.

Request for Interview

At page 9 of the response filed 129/05, Applicant set forth a request for an interview with the Examiner. This request was attached to an amendment which must be acted on by the Office in a timely fashion. In the future, Applicant is invited to contact the Examiner directly to arrange any interviews prior to the submission of amendments, so that any remaining issues can be discussed in a timely fashion.

Rejections Withdrawn

All rejections of record are withdrawn in light of the cancellation of all previously pending claims. No double patenting rejections are made over the instant claims because Applicant filed a terminal disclaimer over US Patents 6,312,682 and 6,669,936 on 12/9/05.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 63-81 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 63-81 are drawn to a lentivirus-based retroviral production system for producing a replication defective retroviral vector comprising one or more nucleic acids "encoding a genome". The claims do not limit the nature of the genome in any way except that it cannot encode a functional *tat* sequence. As such the breadth of the genus of embraced genomes is extremely broad. The specification as a whole is drawn to retroviral genomes and discloses no suitable genomes other than a retroviral genome. Thus one of skill in the art could not conclude that Applicant was in possession of any member of the claimed genus other than a retroviral genome at the time the invention was filed. Substitution of the phrase "the genome of the replication deficient retroviral vector" for the phrase "a genome" in claim 63 is suggested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 63-65 and 68-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verma (US Patent 6013516) in view of Chang et al (Virology 211: 157-169, 1995).

Verma taught an infectious, replication defective lentiviral particle comprising a genome comprising a therapeutic gene, a non-retroviral promoter, and an RRE, wherein the particle comprises gag, pol, and env. See e.g. column 2, lines 11-42; Fig, 1 "Transfer vector", which shows a vector comprising an RRE and a cytomegalovirus promoter; paragraph bridging columns 4 and 5; column 5, lines 39-45; paragraph bridging columns 7 and 8; column 9, lines 42-48 for disclosure of therapeutic genes; and column 12, lines 19-21. Verma also taught that the virus could be pseudotyped by substitution of vesicular stomatitis virus G protein for HIV env (see column 10,lines 1-16). Verma also taught a set of vectors for producing the lentiviral particle including one vector encoding gag and pol, a separate vector encoding env, and a third vector comprising RRE sequences, LTRs, and a heterologous promoter and gene. See claim 1 and Fig. 1.

Verma did not explicitly suggest deletion or disruption of tat genes.

Chang taught that HIV Tat was not necessary for retrovirus production, and that it had been implicated in promotion of Kaposi sarcoma and suppression of immune cell activation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to omit the tat gene from the constructs used to make the retroviral particle of Verma. One would have been motivated to do so because Chang taught that virus

could be produced without Tat. The resulting production system would be simpler, and safer in view of Chang's teachings regarding Kaposi's sarcoma. Also, deletion of the upstream tat exon (that does not overlap the env open reading frame) would provide more space for incorporating genes of interest into the limited length of the retroviral genome, i.e. it would increase the capacity of the vector to accept inserted material. Thus one would have been motivated to delete Tat.

Claims 66 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verma (US Patent 6013516) and Chang et al (Virology 211: 157-169, 1995) as applied to claims 63-65 and 68-81 above, and further in view of either one of Bray et al (Proc. Nat. Acad. Sci. USA 91: 1256-1260, 1994) or Hammarskjold et al (US Patent 5585263).

The teachings of Verma and Chang are summarized above and can be combined to render obvious an HIV-1 based system for producing a replication defective retroviral vector pseudotyped with VSV-G env, comprising nucleic acid sequences encoding an HIV-1-derived genome, gag, pol, env, an RRE, and lacking any nucleic acid encoding a functional Tat protein.

These references do not teach a constitutive transport element.

Bray et al taught that a 219 base fragment of Mason Pfizer monkey virus was capable of substituting for Rev and the RRE in promoting transport of intron-containing HIV mRNA. See entire document, especially page 1256, column 2 last full paragraph before MATERIALS AND METHODS.

Hammarskjold disclosed the same taught that 219 base fragment of Mason Pfizer monkey virus and taught that it was functionally equivalent to the HIV RRE. See entire document, especially column 6, lines 8-13.

It would have been obvious to one of ordinary skill in the art at t he time of the invention to substitute the Mason Pfizer monkey virus CTE for the RRE of Verma. MPEP 2144.06 indicates that when it is recognized in the art that elements of an invention can be substituted, one for the other, while retaining essential function, such elements are art-recognized equivalents. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). Furthermore, MPEP 2144.07 indicates that the selection of a known material based on its suitability for its intended use supports the determination of prima facie obviousness. See also Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945).

Thus the invention as a whole was prima facie obvious.

Response to Arguments

Applicant's arguments filed 12/9/05 have been fully considered to the extent that they apply to the rejections above, but they are not persuasive.

At page 8 of the response Applicant argues that the skilled artisan could not combine the Chang and Verma references because the Tat mutants of Chang were shown to be replication competent. This is unpersuasive because Chan was not relied

upon to teach replication defective vectors, instead it is Verma who teaches this limitation. Applicant did not consider the motivation for combining the references that was stated in the rejection, i.e. deletion of *tat* sequences would result in a simpler system that would be safer in view of Chang's teachings regarding Kaposi's sarcoma. Also, deletion of the upstream tat exon (that does not overlap the env open reading frame) would provide more space for incorporating genes of interest into the limited length of the retroviral genome. Because the references teach each and every limitation of the claims, and because Applicant has not addressed the stated motivation for combining the references, the rejections are considered proper.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner(s) should be directed to Richard Schnizer, whose telephone number is 571-272-0762. The examiner can normally be reached Monday through Friday between the hours of 6:00 AM and 3:30 PM. The examiner is off on alternate Fridays, but is sometimes in the office anyway.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Andrew Wang, can be reached at (571) 272-0811. The official central fax number is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Richard Schnizer, Ph.D.
Primary Examiner
Art Unit 1635